Line-of-Sight Technical Working Group (LOS TWG) Scope/Definition

(Briefing to) Line-of-Sight Technical Working Group

23 September 2003

Introduction/Purpose

- **Established on June 5, 2003 by the Topographic Engineering Center**
- **To Understand Differences Between LOS Algorithms**
- **To Provide a Standard Reference Source and Process for using LOS as a “tool” to Validate Data Sources critical to operational Applications**
- **To Establish a Forum Where Experts in LOS Algorithms can Exchange Ideas and Reseasrch**
- **To Produce a LOS Compendium**

LOS Defined

“an unobstructed view between two points”

Terrain Source and Accuracy Data Issues

- **NGA (previously NIMA) DTED (existing photo source)**
- **LIDAR**
- **IFSAR/INSAR**
- **SRTM**
- **Other extant datasets (high resolution TEC/TRAC data).**
- **Importance of accuracy/resolution and how to VV&A DEMs.**

Terrain Content Relating to LOS

- **Bare earth**
- **Vegetation**
- **Urban**

Assure Appropriate Characterization of LOS

- **Further develop/extend existing methodologies**
  - **Terrain representations (TIN, grid, splines, wavelets)**
  - **Sensor/target selection and heights**
  - **Field collection techniques**
  - **Visualization (primary for virtual)**
- **Develop/explore new initiatives in virtual LOS representation**

Probability of LOS (PLOS)

- **Explore PLOS utility to delineate inherent uncertainties in LOS calculation.**
- **Given the accuracy of the terrain, what is the PLOS?**

User Education and Services

- **Promote use and dissemination of available LOS source data; analyses; and associated metadata (that have been previously validated and are currently available) for use in operational testing.**
- **Develop an LOS compendium to include algorithms, source data, etc.**
- **Provide technical support/expertise to other activities (w/funding) wishing to explore LOS issues**

LOS Compendium

- **Algorithm name**
- **Point of contact information**
- **Computer language of algorithm**
- **Target audience: (constructive models, virtual models)**
- **Coordinate systems used (UTM, Geocentric, Lat/Long)**
- **Feature (vegetation/urban) representation: (none, presented as solid objects, represented as opaque objects, use of a user defined distance of vegetation penetration).**
- **Elevation data representation: (evenly spaced grid, unevenly spaced grid, TIN, spline, wavelet)**
- **Sensor and target heights: (user selected or hardwired)**

LOS Compendium (continued)

- **Sensor and target locations: (nearest grid point, interpolated)**
- **LOS scope (flat earth, curved earth, radar LOS)**
- **LOS investigation: (Point-to-point, point-to-area, area-to-point, area-to-area, LOS along radials, LOS into a user defined polygon)**
- **Point interpolation (none, nearest point, SW corner, weighted average of surrounding points, bilinear interpolation, triangle interpolation, polynomial interpolation, spline).**
- **Other considerations**

Issues Not Covered
(in the short term)

- **Detection and acquisition.**
  - **Currently, these issues are being revisited for accuracy. Also, LOS is a geometry issue while detection is a physics issue.**
- **Refraction, reflection, obscurants.**

ADDRESS / POC's

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